Review Article

Narrative review: recent advances in doll therapy for Alzheimer's disease

Xiaoyan Cai, Lu Zhou, Peiying Han, Xiaolan Deng, Huanhuan Zhu, Fang Fang, Zhi Zhang

Department of Geriatrics, Nanjing Drum Tower Hospital, the Affiliated Hospital of Nanjing University Medical School, Nanjing, China

Contributions: (I) Conception and design: X Cai, F Fang; (II) Administrative support: X Deng; (III) Provision of study materials or patients: L Zhou, H Zhu; (IV) Collection and assembly of data: P Han, X Cai; (V) Data analysis and interpretation: X Cai, F Fang, Z Zhang; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Zhi Zhang. Department of Geriatrics, Nanjing Drum Tower Hospital, The Affiliated Hospital of Nanjing University Medical School, Nanjing, China. Email: 53635388@qq.com.

Abstract: Alzheimer's disease (AD) is a severe neurodegenerative disease which impacts the quality of life in elderly patients and imposes a significant burden to families and caregivers. The prolonged life expectancy and rapidly increasing world population significantly increased the morbidity. Although it has been widely reported that the aggregation of Beta amyloid and neurofilaments is the most significant pathological change. Currently, there is no effective drug therapy for AD, and the potential risks of pharmacotherapy remain concerns. This article reviews the recent research on Doll therapy (DT), a widely used non-drug therapy on AD patients, especially its clinical effectiveness and precautions in treating AD, with an attempt to further alleviate the mental symptoms and improve the health status of AD patients. Thus, nonpharmacological treatments of AD have become an area of intense research interest in recent years. DT is a person-centered therapy that can improve both the mental and cognitive status and the quality of life in AD patients. Although there remains ethical controversy about the DT on AD patients, its positive effect has been proved. Moreover, a standards manual is required to stipulate the range of application, the time course for treatment and withdraw the toy from the patients.

Keywords: Doll therapy (DT); Alzheimer's disease (AD); advance; review

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Overview

Alzheimer's disease (AD) is a progressive neurodegenerative disease. It is mainly featured by memory impairment but is often accompanied by symptoms such as language impairment, emotional instability, and decreased mobility. According to the statistics released by Alzheimer's Disease International (ADI) in 2018 (1), 50 million people are living with dementia globally, with AD contributing to approximately 60–70% of these cases (2-5). Without effective treatment and response measures, the number of people with dementia is expected to increase to 82 million in 2030 and 152 million in 2050. There are currently no effective treatments that can stop or reverse AD, and the effectiveness and adverse effects of pharmacological treatments remain unsatisfactory (3,6,7). Some nondrug therapies, such as reminiscence therapy, music therapy, aromatherapy, and doll therapy (DT), have been shown to be effective in temporarily relieving or improving symptoms and enhancing the quality of life. Among them, DT has been widely investigated due to its simplicity and cost-effectiveness (8-11). Here, we review the studies related to the treatment of AD with DT, with an attempt to better understand the effectiveness and clinical applications of this nondrug therapy.

We present the following article in accordance with the Narrative Review reporting checklist (available at http://dx.doi.org/10.21037/apm-21-853).

Definition

There is no uniform definition for DT. According to Pezzati *et al.* (10,12,13), DT is a nonpharmacological intervention aimed at reducing behavioral and psychological disorders in institutionalized patients with dementia. It is effective in promoting and maintaining the affective-relational dimension of attachment caregiving and the attentive dimension of exploration in patients with advanced stage of dementia, thus promoting clinically significant improvements in the ability to relate with the surrounding world. This therapy has been adopted and applied in long-term care facilities as a care tool to address the cognitive, behavioral, and physical problems of people living with dementia (9,14).

Theoretical rationale

The theoretical rationale of DT is based on the concept of attachment theorized by Bowlby in 1980, with self-protective mechanisms functioning as its biological basis. While most of the early studies on the attachment theory were focused on infants, in 1987, Hazan *et al.* (15) explored the possibility that romantic love in adults is an attachment process. As an important part of healthy development, attachment contributes to the ability of human beings to survive and adapt better to their environment and society. People have a need for attachment, and they have a tendency to seek and maintain proximity to a specific person when under stress. Miesen (16) has proposed the use of attachment theory as the key to the behavior of patients with dementia and describes the experience of a person with dementia as "*a battle against powerlessness*, *disruption of daily existence and emotional collapse*, *similar to the basic reaction of anyone after a trauma of any nature or impact*". Therefore, for AD patients, attachment is often considered to be an essential psychological need due to the physical and psychological impairment caused by the disease (17).

Classification

Dolls used for AD patients include both empathy dolls and anatomically correct dolls. Empathy dolls are typically ordinary toys, and anatomically correct dolls are more realistic. No study has compared the clinical effectiveness of these two doll types.

Clinical values of DT for AD

Improving cognitive function and memory

The core symptom of AD is the progressive impairment of language and cognitive function, and DT helps to improve cognitive functions (such as memory and language). Cai *et al.* performed a controlled trial in 186 AD patients and found 93 patients in the DT group showed significantly improved language, place judgment, memory, movement, and cognitive function compared to 93 patients in the control group (treated with conventional therapy). Balzotti *et al.* (11) applied DT in 10 AD patients, and the DT group showed significant improvements in agitation, irritability, and other psychological symptoms relative to controls; the patients' interaction and familiarity with the dolls facilitated the formation of communication and attachment relationships, reduced behavioral and emotional disturbances, delayed the progression of the disease to a certain extent, and improved the cognitive function of patients.

Reducing unsafe behaviors and psychotropic drug use

Several studies have shown that DT can reduce the use of antipsychotic drugs and decrease unsafe behaviors in AD patients. Juh *et al.* (18) conducted a controlled study on 72AD patients: 22 patients in the control group received conventional treatment and 52 patients in the DT group were given DT plus conventional treatment. The results showed that the Agitated Behavior Scale (ABS) score was significantly lower in the DT group than in the control group, indicating that DT was beneficial in relieving the agitated behavior of AD patients. Meanwhile, Green *et al.* (8,10) found that DT was associated with less haloperidol use and fewer manic and agitated behaviors.

Improving mood and mental well-being

Most AD patients have a variety of mood-related symptoms, including anxiety, depression, panic disorder, and mania. Burke *et al.* (19) reported an increased incidence of depression of up to 69% in 712 AD patients. AD patients are more likely to develop loneliness, despair, depression, and other negative emotions due to long-term social isolation, and DT can meet their emotional needs (e.g.,

attachment and respect), alleviate their negative emotions, and enhance their feeling of well-being. In a study performed by Moyle *et al.* (14), 3-week intervention with DT provided older people living with dementia with both enjoyment and emotional comfort/calm.

Improving the quality of life and health status

Patients with advanced AD can no longer live independently and require long-term care, which impacts the entire family, society, and the health care system. McCready *et al.* (9) performed a controlled trial in 87 AD patients and found each dimension of quality of life was improved in 42 patients in the DT group compared with the 45 patients in the control group (treated with conventional therapy). Mitchell *et al.* (20) observed that AD patients who received DT had increased dietary intake and higher awareness of food, while Green *et al.* (8) concluded that DT was beneficial in improving sleep quality and the cooperation of patients.

Precautions for DT

An approval must be obtained from the medical ethics committee of a hospital before the use of DT in an AD patient. Before the use of dolls, the participants and their families should be informed of the purpose of the treatment orally or in writing, and a written informed consent form must be signed. Appropriate dolls should be selected and dressed with baby clothes. The ownership of a specific doll should not be confused when 2 or more AD patients receive DT simultaneously.

DT should be suspended immediately if the patient shows any pain or discomfort. The patient's attitude must be closely monitored during the introduction of a doll. If the patient clearly expresses his/her refusal, the doll should be removed accordingly. Behaviors such as active approaching the doll, hugging/kissing the doll, and talking with the doll are considered the patient's acceptance of the doll. In general, the doll should not be directly removed from the patient. However, when the patient is too tired, the practitioner should temporarily remove the doll in a way that is acceptable to the patient (2,12).

Summary

AD is an irreversible, progressive disease. The progression of AD is associated with a variety of physical and mental problems, such as cognitive decline, language disorder, emotional instability, and inability of self-care, levying considerable burdens and challenges to society, families, and the health care system (1). As an emerging and safe nonpharmacological treatment, DT offers a simple and cost-effective treatment option for AD. It can effectively improve the cognitive function and memory of AD patients, reduce agitated behavior, improve mood, and enhance quality of life (8). However, the clinical efficacy of DT has not yet been adequately investigated in high-quality studies, and there are certain ethical controversies in the implementation of DT. Therefore, whether DT can be widely applied for treating AD in clinical settings needs to be further explored (9,16,20-22). In summary, DT is a feasible and effective intervention for AD, with few adverse effects.

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Footnote

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